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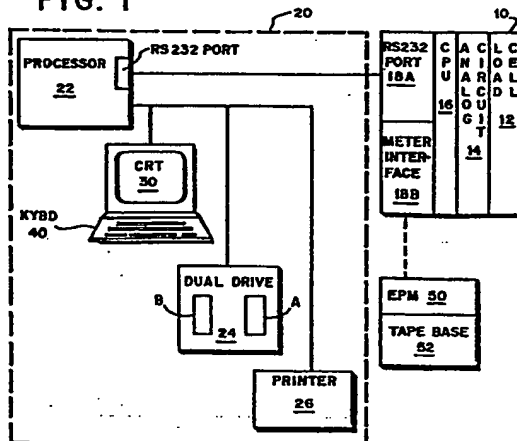
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(64) Method and apparatus for updating parameter data.

(57) In a microprocessor based mailing system, postal rate charts (Figure 2A) are provided on portable media such as floppy disks, having the capability to update such postal rate charts. The mailing system includes a microcomputer system made up of microprocessor 22, a CRT display 30, a keyboard 40, a dual disk drive 24 and a printer 26. The mailing system also has a scale for determining the weight of items to be mailed, and an optional postal meter. The microprocessor determines the appropriate postage for items to be mailed in accordance with (a) the item's weight, (b) postal information input by an operator and (c) postal rate charts stored on a first disk in one of the disk drives. To update the postal rate charts a second disk may be substituted for the first while the first disk is shifted to the other drive. The second disk contains updating information and an updating program to update the rate charts. Upon initialization of the system the updating program is loaded and executed. After updating the first disk the information on the second disk is destroyed, preferably by copying the updated first disk onto it.

FIG. 1

METHOD & APPARATUS FOR UPDATING PARAMETER DATA

This invention relates to a method and apparatus for updating parameters used in a data processing system. The invention relates particularly although not exclusively to a method and apparatus for
5 updating postal rate charts and other postal data in a data processing system which determines applicable postage values for items to be mailed based on the weight of that item and other mailing information.

Mailing systems, in general, are known and a typical such mailing system is described in U.S. -A- 4,286,325 for System and Method for
10 Computing Domestic and International Postage, issued August 25th, 1981 to Dlugos, et al. The system disclosed in this reference is dedicated to carrying out the above described postage value computation functions and, though including a number of processors, is not a general purpose data processing system. Because of the dedicated use of the system described
15 in U.S. Patent 4,286,325 it was feasible to include both the system programs for computing postage values from weights and other postal information relating to items to be mailed, as well as rate charge defining postage rates, in read-only-memory (ROM's) incorporated in such system. Thus, in the system of U.S. -A-4,286,325, as postage rate charts needed to
20 be updated, new ROM's would be distributed by the supplier of the system. Since these ROM's were physically incorporated in the system the problems of improper copying and distribution of postage rate charts were minimized.

Recently it has become desirable to incorporate more computing
25 power into such mailing systems in order to handle additional functions, such as the generation of journals, charge back accounting and the generation of manifests. As the result, recent systems have incorporated more powerful general purpose microprocessors not only to compute applicable postage values but also to handle other functions such as those
30 described immediately above. In mailing systems based on general purpose

microprocessors, an effective way to provide systems programs, rate charts and other postal data, such as zip to zone charts has been to use the portable storage media generally provided with such microprocessing systems. Typically this portable storage media might be a floppy disk.

5 However, when a floppy disk is used for storing systems programs and postal data, problems arise in distributing updating information, since floppy disks may be readily reproduced using the general purpose processor and associated drives incorporated in the mailing system. This reduces the supplier's control over the distribution of such material. Another problem
10 arises from the fact that users who do not make use of a particular postal service desire that the rate charts for services not used be not included in their system, so as to avoid mistakes by mailing room personnel inadvertently using the wrong service. As a result, numerous variations of rate charts are to be found in the field with different mailing systems and
15 the supplier of the mailing system must keep track of these variations when updating the postal rate charts. This imposes a considerable inventory burden on the supplier.

Thus, it is an aim of the present invention to provide a method and apparatus for updating parameter information, such as rate charts, on data
20 processing system portable media.

According to the present invention, there is provided a data processing system comprising:

- a) a processor
- b) a processor memory operatively associated with said processor for
25 storing programs to be executed;
- c) first portable media drive means operatively associated with said processor for providing access to a portable media;
- d) second portable media drive means operatively associated with said processor for providing access to a portable media;
- 30 e) initializing means for, in response to an initializing signal, controlling

the transfer of program data from a predetermined location on a portable medium mounted in said first drive to predetermined locations in said memory, and for transferring control of said processor to the program defined by said program data;

5 f) a first portable medium for storing data, said first medium including a boot loader program in said predetermined locations, an operating program, selected parameter data to be used in the execution of said operating program whereby said system may be operated in a normal mode to execute said operating program in accordance with said parameter data
10 by mounting said first medium in said first drive and generating an initializing signal;

g) a second portable medium for storing data, said second medium data including data for updating said selected parameter data and said second medium data further including data defining an updating program for
15 controlling the updating of said selected parameter data when said first medium is mounted in said second drive, said updating program data being stored so as to be loadable by said initializing means, whereby said system may be operated in an updating mode to update said selected parameter data by mounting said first medium in said second drive, mounting said
20 second medium in said first drive and generating an initializing signal.

In a particular embodiment, the processor has a memory for storing programs to be executed by the processor, a mass storage means for storing data, the data including selected parameters to be used in the execution of programs and additional data identifying the selected
25 parameters, a portable media storage means for storing data on portable media such as floppy disks, the portable media data including data for updating the parameters and a program for controlling the updating, means for transferring data between the mass storage means and the memory and for transferring data between the portable media storage means and the
30 memory, initializing means for controlling the transfer of the updating

program from the portable media in response to an initialization signal, and wherein the processor then executes the updating program to access the additional data and to identify the selected parameters and then updates the selected parameters in accordance with the updating data.

- 5 There is also disclosed herein a data processing system comprising: a processor, a memory operatively associated with the processor for storing programs to be executed, a first portable media drive for providing access to portable media and a second portable media drive for providing access to portable media, initializing apparatus for, in response to an initializing
10 signal, controlling the transfer of program data from a predetermined location on a portable medium mounted in the first drive to predetermined locations in the memory and for transferring control of the processor to the program defined by the program data, a first portable medium for storing data the first medium including a boot-up program in the
15 predetermined locations, an operating program and selected parameter data to be used in the execution of the operating program and also additional data identifying the selected parameter data; whereby the system may be operated in a normal mode to execute the operating program in accordance with the parameter data by mounting the first
20 medium in the first drive and generating an initializing signal, and a second portable medium for storing data the second medium including data for updating the selected parameter data and further including data defining an updating program for controlling the updating of the selected parameter data when the first medium is mounted in the second drive, the updating
25 program being stored in the predetermined locations (or, equivalently, including a boot-up program in the predetermined locations); whereby the system may be operated in an updating mode to update the selected parameter data by mounting the first medium in the second drive and mounting the second medium in the first drive and generating an
30 initializing signal.

The subject invention also includes a portable storage medium storing data as patterns of indicia in selected locations within the structure of the medium for use in a data processing system to update data stored in a similar storage medium, the similar medium additionally storing data in predetermined locations defining a program to be loaded into, and executed by the data processing system upon initialization of the data processing system when the portable storage medium is operatively associated with the data processing system, the portable storage medium including, a first pattern of indicia representing data for updating the parameter data, and a second pattern of indicia, stored in locations corresponding to the predetermined locations in the similar storage medium, the second pattern defining an updating program for updating the parameter data in accordance with the updating data, whereby the portable storage medium may be substituted for the similar medium so that the updating program may be loaded into, and executed by, the data processing system upon initialization of the data processing system and the data processing system may update the parameter information in accordance with the updating data when the similar medium is operatively associated with the data processing system.

In a preferred embodiment of the subject invention, the data processing system further includes a scale and the operating program computes postage values in accordance with weight of items to be mailed as determined by the scale and in accordance with the parameter information which comprises postal data charts.

In other preferred embodiments of the subject invention the updating program destroys the updating data on the second portable media after updating the parameter information so as to prevent unauthorized distribution of the updating information.

The invention as particularly described herein provides an

advantageous method and apparatus for updating parameter information in a data processing system wherein the full capabilities of the microprocessor comprised in such system are utilized and unauthorized further distribution of such updating data is prevented.

5 The invention will be better understood from the following non-limiting description of examples thereof given with reference to the accompanying drawings in which:-

Figure 1 shows a schematic block diagram of a mailing system in accordance with the subject invention.

10 Figure 2 shows floppy disk portable storage media in accordance with the subject invention.

Figure 1 shows a schematic block diagram of a mailing system in accordance with the subject invention. The system comprises scale 10, microcomputer system 20 and, optionally, postage meter 50. The meter 50 also includes tape base 52. Preferably, meter 50 is a Model 6500 electronic postage meter produced by Pitney Bowes Inc. of Stamford, Connecticut 06926.

Scale 10 comprises a conventional load cell 12 which produces an analog signal proportional to the load on the cell, conventional analog circuitry 14 which senses, amplifies and digitizes the analog signal to produce a periodic digital signal representative of the analog signal, and CPU 16 which receives the digital signal and processes it to determine the weight of the item to be mailed. Construction of such a processor controlled digital scale is well understood in the art and forms no part of the novelty of the present invention. A typical example of such a digital processor controlled scale is shown in U.S. -A- 4,236,222 to Loshbough, et al., issued November 25th, 1980.

The microcomputer system 20 comprises microcomputer 22 operatively connected to a dual floppy disk drive 24, a printer 26, a display CRT 30 and a keyboard 40. Microcomputer system 20 is substantially

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similar to any number of commercially available microcomputer systems such as the Altos Microcomputer System produced by the Altos Corporation of San Jose, California. Preferably, computer system 20 will have a modified keyboard 40 including special function keys defining various postal information, such as class of service or special rates. A typical set of such special function keys is _____

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taught in U.S. Patent Number 4,286,325 to Dlugos, et al., issued August 25, 1981.

Microcomputer 22 is operatively connected to scale 10 through RS 232 port 18A. RS 232 port 18A provides a standard serial interconnection protocol well known and understood by those skilled in the art and a description of the interconnection process is not necessary for an understanding of the subject invention. If used, electronic postage meter 50 is operatively connected to scale 10 through meter interface 18B. Because operation of postage meter 50 is equivalent to spending money to buy a stamp, interface 18B is specially designed to be secure and have a low error rate. Such an interface is described in U.S. Patent Number 4,301,507 to Soderberg, et al., issued November 17, 1981, which is hereby incorporated by a reference.

The weight of an item to be mailed is transmitted from CPU 16 through RS 232 port 18A to microcomputer 22. Microcomputer 22 computes the appropriate postage value in accordance with the weight and postal information entered through keyboard 40, as will be described further below. If electronic postage meter 50 is included in the system the appropriate postage value is transmitted back to CPU 16, which in turn transmits the information to postage meter 50 through meter interface 18B as described in the above Soderberg patent. Meter 50 functions conventionally to print appropriate indicia on a meter tape for application to the item to be mailed and to record and account for the postage expended. Alternatively, the appropriate postage value may be printed by printer 26 in conjunction with item identification information to generate a manifest which may be used by a commercial delivery service such as UPS. For simplicity the description of the operation of the mailing system of the subject invention given below will be in terms of a manifest system for use with commercial delivery system such as UPS.

In the normal mode of operation a floppy disk such as that shown in Figure 2a is mounted in drive A of dual disk drive 24. In response to an initialization, or power-up signal microcomputer 22 executes a brief program stored in a ROM which is an integral part of microprocessor 22 to load a boot loader program stored in a predetermined location of the disk of Figure 2a.

The boot loader program then loads the system program stored on the disk of Figure 2a into the memory of microcomputer 22 and transfers control to the systems program. The systems program operates on weight data for items to be mailed received from scale 10 and other postal information, such as destination and class of service, received from an operator through keyboard 40 to compute appropriate postage values in accordance with postal data charts stored on the disk of Figure 2a. In a preferred embodiment the systems program will display prompts on CRT 30 to elicit the required information from the operator.

Having determined the appropriate postage value for an item to be mailed microcomputer 22 prints out the appropriate value in conjunction with information identifying the item to be mailed on the manifest sheet in printer 26. The invoice sheet can then be used to determine the total amount to be paid to the UPS driver when a shipment is picked up and as the invoice for that shipment.

Methods for computation of postage values are known and are described in U.S. Patent Number 4,286,325 to Dlugos, et al., which is hereby incorporated by reference.

In another preferred embodiment of the subject invention drive B of dual drive 24 may be used to mount a second floppy disk which may be used to record a daily, or longer, record of transactions.

In order to update the postal rate charts of the disk of Figure 2a the system of Figure 1 may be placed in an update mode by mounting the disk of

Figure 2b in drive A and the disk of Figure 2a in drive B. In response to the initialization signal microcomputer 22 would then load the update program, which is stored in locations corresponding to the boot loader on the disk of Figure 2a. (equivalently a boot loader in the corresponding locations on the disk of Figure 2b may be used to load the update program). The update program then reads identification data from the disk of Figure 2a which identifies the particular postal rate charts that are available on that disk and are associated with particular postal services used by that system and updates those postal rate charts in accordance with the update data on the disk of Figure 2b. After the postal rate charts are updated the program then copies the disk of Figure 2a, in its updated form, back onto the disk of Figure 2b thus, simultaneously providing a back-up systems disk while destroying the update data to prevent unauthorized re-use of that data.

Preferably the update data may include data defining a check sum which may be used by the update program to validate the data on the systems disk after updating. The updating program would generate a check sum from the updated data on the systems disk in accordance with any of several well known techniques and compare it with the stored check sum. Additionally, the generated check sum could be displayed on CRT 30 for visual verification by an operator.

It will be seen that the invention particularly disclosed and illustrated herein provides an updating method and apparatus in a manner which reduces cost and decreases inventory control problems; and moreover permits the supplier of a mailing system to control the distribution of such updating information.

Those skilled in the art will recognize that the embodiment described above and illustrated in the attached drawings is intended for purposes of illustration only and that the subject invention may be implemented in various ways. Thus, it is to be understood that the particular details of the embodiments described above are not to be considered as limiting the scope of the invention.

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CLAIMS

1. A data processing system comprising:
 - a) a processor
 - b) a processor memory operatively associated with said processor for storing programs to be executed;
 - c) first portable media drive means operatively associated with said processor for providing access to a portable media;
 - d) second portable media drive means operatively associated with said processor for providing access to a portable media;
 - e) initializing means for, in response to an initializing signal, controlling the transfer of program data from a predetermined location on a portable medium mounted in said first drive to predetermined locations in said memory, and for transferring control of said processor to the program defined by said program data;
 - f) a first portable medium for storing data, said first medium including a boot loader program in said predetermined locations, an operating program, selected parameter data to be used in the execution of said operating program whereby said system may be operated in a normal mode to execute said operating program in accordance with said parameter data by mounting said first medium in said first drive and generating an initializing signal;

g) a second portable medium for storing data, said second medium data including data for updating said selected parameter data and said second medium data further including data defining an updating program for controlling the updating of said selected parameter data when said first medium is mounted in said second drive, said updating program data being stored so as to be loadable by said initializing means, whereby said system may be operated in an updating mode to update said selected parameter data by mounting said first medium in said second drive, mounting said second medium in said first drive and generating an initializing signal.

2. A data processing system as described in Claim 1 wherein:

- a) said system further comprises a scale operatively associated with said processor for determining the weights of items to be mailed;
- b) said parameter data comprises of postal data charts; and,
- c) said operating program determines the applicable postage values for said items to be mailed in accordance with the weight of said item, as measured by said scale, and said rate charts.

3. A data processing system as described in Claim 2 wherein said system further comprises means for entry by an operator of additional postal information, said information including information defining the desired class of postal service, and said operating program selects appropriate postal data charts in accordance with said desired class of service.

4. A data processing system as described in Claim 3 wherein said first medium data further includes additional data identifying selected postal data charts so that said system may only compute postal values for corresponding classes of postal service.

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5. A data processing system as described in Claim 4 wherein said updating data includes data for updating all available postal data charts and said updating program updates only said selected postal rate charts in accordance with said additional identifying information stored on said first medium.

6. A data processing system as described in Claim 1 wherein said updating program controls said system in said updating mode to destroy said updating data after updating of said parameter data.

7. A data processing system as described in Claim 2 wherein said updating program controls said system in said updating mode to destroy said updating data after updating said updating parameter data.

8. A data processing system as described in Claim 6 wherein said updating program destroys said updating data by copying the information contained on said first medium after updating onto said second medium, so as to provide a back-up copy of the updated first medium while destroying said updating data.

9. A data processing system as described in Claim 7 wherein said updating program destroys said updating data by copying the information contained on said first medium after updating onto said second medium, so as to provide a back-up copy of the updated first medium while destroying said updating data.

10. A data processing system as described in Claim 1 wherein said updating program further controls said processor to check the validity of said updating data in accordance with a check sum algorithm.

11. A portable storage medium storing data as patterns of indicia in selected locations within the structure of said medium for use in a data processing system to update parameter data stored in a similar storage medium, said similar storage medium additionally storing data in predetermined locations defining a program to be loaded into and executed by said data processing system upon initialization of said data processing system when said similar storage medium is operatively associated with said data processing system, said portable storage medium comprising:

a) a first pattern of indicia representing data for updating said parameter data; and,

b) a second pattern of indicia, stored in locations such that said second pattern will be loaded into said data processing system upon initialization, said second pattern defining an updating program for updating said parameter data in accordance with said updating data, whereby said portable storage medium may be substituted for said similar medium so that said updating program may be loaded into, and executed by, said data processing system upon initialization of said data processing system and said data processing system may update said parameter information in accordance with said updating data when said similar medium is operatively associated with said data processing system.

12. A portable storage medium as described in Claim 11 wherein said parameter data consists of postal data charts and said second pattern of indicia defines data for updating said postal data charts.

13. A portable storage medium as defined in Claim 11 wherein said updating program controls said data processing system to destroy said first pattern of indicia after updating said parameter information.

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14. A portable storage medium as defined in Claim 12 wherein said updating program controls said data processing system to destroy said first pattern of indicia after updating said parameter information.

15. A portable storage medium as described in Claim 13 wherein said updating program controls said data processing system to destroy said updating data by copying the information stored on said similar medium onto said portable storage medium after updating, so as to provide a back-up copy of said similar medium after updating while destroying said updating data.

16. A portable storage medium as described in Claim 14 wherein said updating program controls said data processing system to destroy said updating data by copying the information stored on said similar medium onto said portable storage medium after updating, so as to provide a back-up copy of said similar medium after updating while destroying said updating data.

17. A portable storage medium as described in Claim 11 wherein said updating program controls said data processing system to verify the accuracy of said updated parameter data in accordance with a check sum algorithm.

FIG. 1

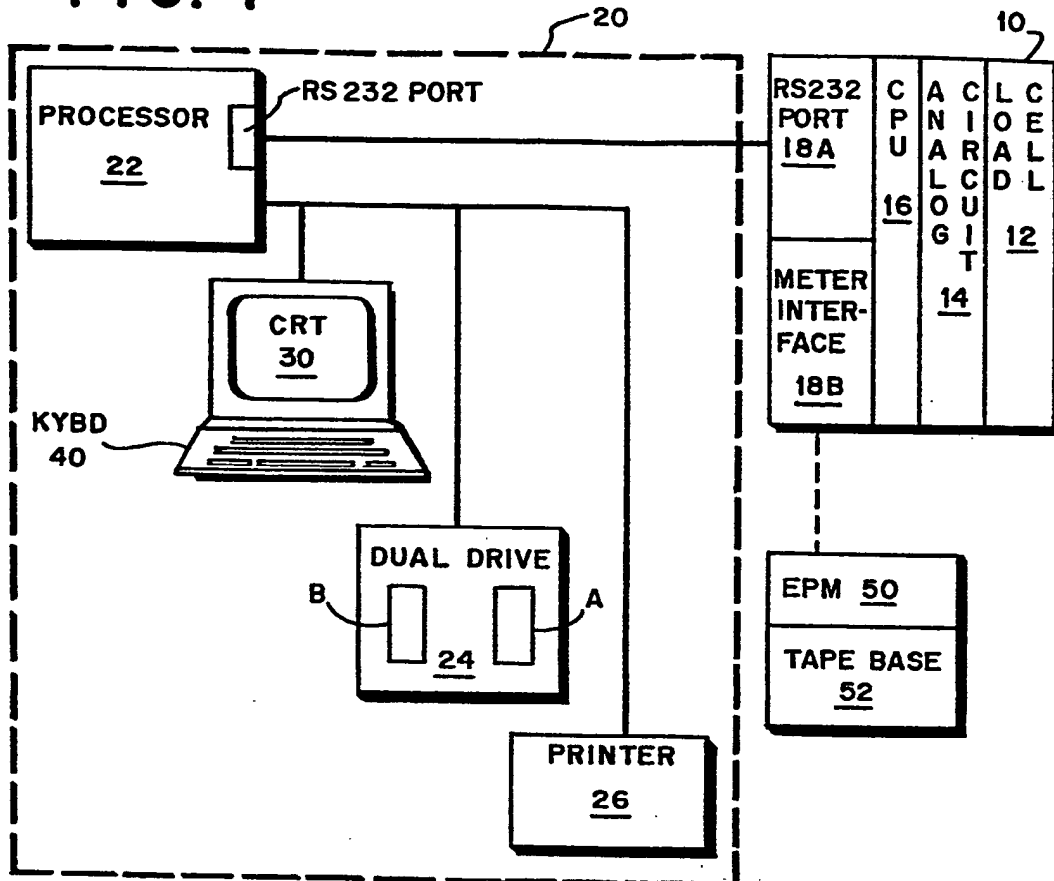
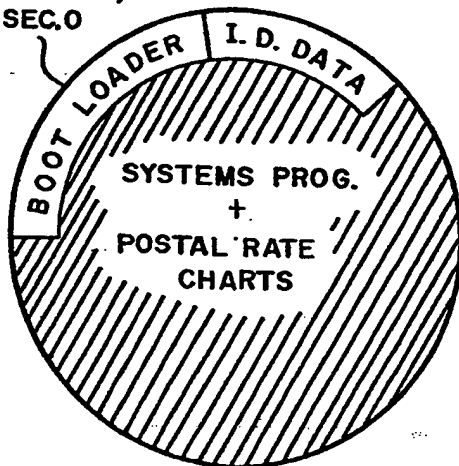
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FIG. 2A

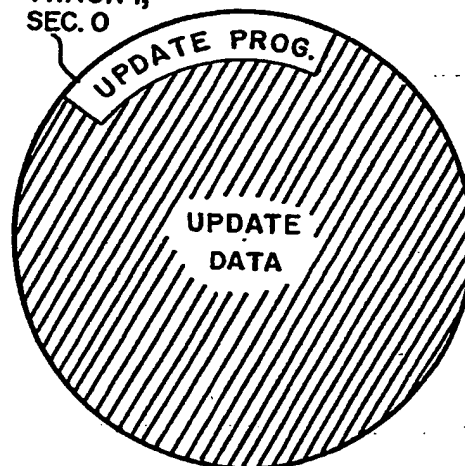
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FIG. 2B